Case 12917
Rupture of an ovarian teratoma

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Section: Uroradiology & Genital Male Imaging
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Patient: 68 year(s), female

Clinical History

A 68-year-old female psychiatric patient was admitted to the emergency department because of vomiting and diarrhea for about two days. Clinical examination revealed marked abdominal distention, bubbling sounds by auscultation and diffuse tenderness of the abdomen. For further work-up an abdominal CT was performed.

Imaging Findings

Contrast-enhanced (CE) CT showed a large mass in the pelvis containing fluid, fat and a tooth (Fig 1). A rim of fat was seen at the outer upper border of the mass, surrounded by intra-abdominal fluid (Fig 1a and Fig 1c). Perisplenic and perihepatic intra-abdominal fluid as well as subdiaphragmatic areas of low density mimicking intraperitoneal air were seen at the upper abdomen (Fig 2a and Fig

1c). Changing the window setting from parenchymal to pulmonary window revealed that the density of these subdiaphragmatic foci were different from pulmonary air and similar to fat on the Hounsfield scale (Fig 2b).

Discussion

Ovarian teratoma's account for about 20% of the ovarian neoplasms in adults [1, 2]. Mature cystic teratoma is the most common subtype containing sebaceous secretions, hair and teeth [1, 2]. Histologically this subtype consists of a cyst with an epidermal-like epithelial lining with intralesional components of endoderm, ectoderm and mesoderm [2]. The immature subtype contains also these three components but additional embryogenic tissue is always found in this subtype with malignant biological behaviour [1]. Mature cystic teratoma's grow slowly at a rate of 1, 8 mm each year and remain usually asymptomatic and therefore they present often as an incidental finding on imaging done for other reasons [1, 3, 4]. On ultrasound, a Rokitansky nodule containing hair, teeth and fat can cause an acoustic shadowing which is pathognomonic for mature teratoma's [1]. The tip of the ice berg sign" can provoke acoustic shadowing caused by a collection of hair floating on top of the sebum [1]. On CT one should look for the typical three components: fat, fluid and teeth [1]. Complications such as infection, torsion or rupture are relatively rare [2, 5]. The most common complication is torsion (5-15%) of the ovarian pedicle, sometimes associated with small bowel obstruction in case of adherence of the bowel to the cyst wall [1, 3, 4]. Obstruction due to mass effect of large lesions has also been reported [4]. Infection (1, 2 %) is a far less frequent complication [2]. Rupture (0, 7-3, 8%) of a mature teratoma is also unusual because the capsule of the lesion is often thick whereas in the immature variant this complication is more common [1, 3, 4]. Although torsion, infection, trauma, prolonged pressure caused by pregnancy or malignant transformation are considered as potential etiologies, often the precise cause of rupture is not obvious like in our case [3]. An intraperitoneal fat-fluid level on CT can be diagnostic for a ruptured teratoma [3]. Leakage of sebaceous liquid can cause chemical peritonitis with possible secondary bowel obstruction [1, 2, 3]. In our case, the intra-operative view revealed indeed chemical peritonitis due to a ruptured ovarian teratoma (Fig 3). On imaging, it is important to differentiate between free intraperitoneal air caused by gastrointestinal perforation and teratoma rupture with spilling of intra-abdominal fat, which may cause chemical peritonitis. Therefore, meticulous and adjusted window setting is mandatory to avoid misinterpretation of fat-fluid levels as free subdiafragmatic air.

Final Diagnosis

rupture of a teratoma with signs of chemical peritonitis

Differential Diagnosis List

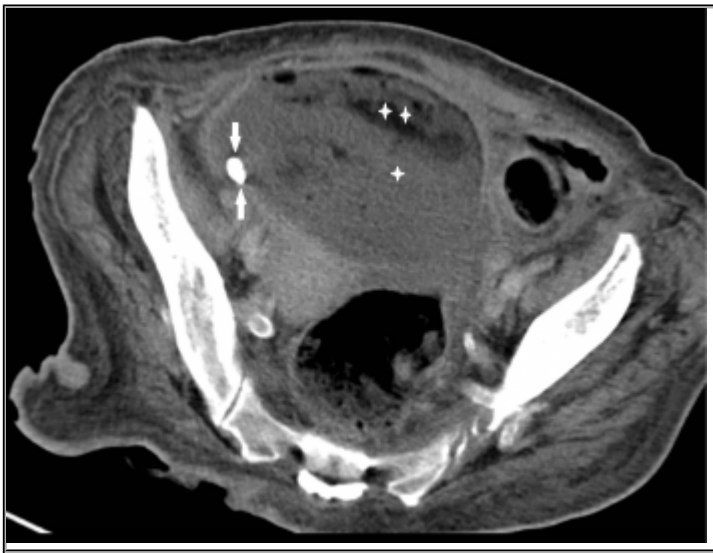
free intraperitoneal air due to a gastro-intestinal perforation, rupture of a teratoma with chemical peritonitis, peritonitis carcinomatosa, infectious peritonitis

Figures

Figure 1 CE CT of the pelvis

Contrast-enhanced CT of the pelvis showed a large mass lesion within the pelvis. There was intra-lesional fat (double white asterisks) and fluid (single white asterisk). The white arrows mark a peripheral fatty rim.

Area of Interest: Abdomen;
Imaging Technique: CT;
Procedure: Contrast agent-intravenous;
Special Focus: Cysts;



A slightly higher axial level: Besides intralesional fat (double white asterisks) and fluid (single white asterisk) , a radio-opaque structure in this heterogeneous mass corresponding to a tooth (white arrows) was seen.

Area of Interest: Abdomen;
Imaging Technique: CT;
Procedure: Contrast agent-intravenous;
Special Focus: Cysts;

The peripheral fatty rim, also partially located outside of the intrapelvic mass (red arrows) was better shown. Perihepatic free fluid and low density areas mimicking free abdominal air (white arrows) were seen (parenchymal window).

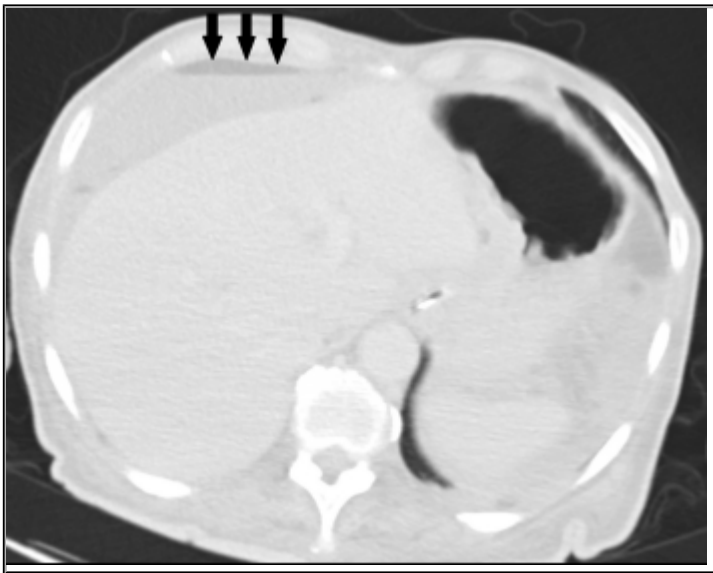
Area of Interest: Abdomen;
Imaging Technique: CT;
Procedure: Contrast agent-intravenous;
Special Focus: Cysts;

Figure 2 Axial CE CT upper abdomen: parenchymal window - pulmonary window

Parenchymal window: There was free abdominal fluid around liver and spleen as well as areas of low density simulating free air (white arrows).

Area of Interest: Abdomen;
Imaging Technique: CT;

Procedure: Contrast agent-intravenous;
Special Focus: Cysts;



The areas of low density (black arrows) have a different density than that of the stomach and the air within the lung. The density of these areas are similar to the density of retroperitoneal fat.

Area of Interest: Abdomen;
Imaging Technique: CT;
Procedure: Contrast agent-intravenous;
Special Focus: Cysts;

Figure 3 Intraoperative view

The exploratory laparotomy revealed a ruptured teratoma with intra-lesional hair and diffuse white-green sebaceous fluid throughout the abdomen.

Area of Interest: Abdomen;
Imaging Technique: Experimental;
Procedure: Diagnostic procedure;
Special Focus: Cysts;

References

[1] Choudhary S, Fasih N, Mc Innes M, Merginean C (2009) Imaging of ovarian teratomas: appearances and complications J Med Imaging Radiat Oncol 53:480-8

[2] Nader R, Thubert T, Deffieux X, de Laveaucoupet J, Ssi YK, et al (2014) Delivery induced intraperitoneal rupture of a cystic ovarian teratoma and associated chronic chemical peritonitis Case Rep Radiol. 2014:189409

[3] Tejima K, Enomoto R, Arano T, Miwa J, Matsubara Y, et al. (2013) A case of chemical peritonitis and pleuritis caused by spontaneous rupture of a benign cystic ovarian teratoma that improved without surgical intervention Clin J Gastroenterol 6:274-80

[4] Al-Harfoushi R, Abdulaziz el-H, Andrabi SI, Patterson B, Whiteside M (2011) Ovarian teratoma presenting as small bowel obstruction in an elderly lady-A case report Int J Surg Case Rep. 2:6-8

[5] Khanna S, Srivastava V, Saroj S, Mishra Sp, Gupta SK (2012) An unusual presentation of ovarian teratoma: a case report Case Rep Emerg Med 2012:845198

Citation

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